DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-11, 13-18 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nordbryhn (US 5,898,169) in view of Rondinelli et al (US 7,123,777 B2), and further in view of Krichever et al (US 2001/0042789 A1).

Regarding Claims 1-3, Nordbryhn discloses a device for recognizing a container, i.e., a bottle or can, having a camera (4), as illustrated in figure 2, and light emission means (1, 5), as illustrated in figure 2, arranged for imaging a selected portion of the container, said camera and light emission means being connected to processor (17), as illustrated in figure 9, said processor adapted for recognition of a container based upon a camera-recorded image, as illustrated in element 19 of figure 9, said imaging effected by at least a first pair of mirrors (11, 24), said mirrors facing each other, said pairs of mirrors positioned on opposite sides of the optical axis of said camera. See figure 10 of Nordbryhn.

Nordbryhn does not expressly disclose, but Rondinelli discloses a second pair of mirrors at col. 28, lines 29-38.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have incorporated a second pair of mirrors in Nordbryhn's apparatus, as

taught by Rondinelli, for the purpose of "increasing the resolution and/or available field of view of the resulting image or images." See Rondinelli, col. 28, lines 29-38.

Regarding Claims 1-3 and 9, Nordbryhn does not expressly disclose, but Krickever teaches a first pair of mirrors being fixedly positioned adjacent to one mirror of the second pair, at an angle to said axis, as illustrated by element "B" in figure 3 of Krickever, whereby said selected portions are shown as respective mirror images in a respective mirror and two areas along the longitudinal direction of the container, as illustrated in figure 3, including one or both end faces imaged simultaneously by said camera (26). Further, said mirror surfaces in each pair are positioned obliquely relative to each other and a line of intersection between said mirror faces adjacent to the optical axis of the camera, which is substantially perpendicular to the optical axis. See figure 3. Note that said mirror faces are positioned symmetrically and directed in the opposite direction of each other.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have incorporated mirrors positioned obliquely relative to each other, perpendicular, symmetrical and opposite to each other in Nordbryhn's device, as taught by Krichever, for the purpose of imaging the container from two sides, as delineated in Krichever, paragraph 4.

Regarding Claims 1 and 2 concerning the equation "alpha >or= beta + gamma", note that Rondinelli and Krickever appears to meet this limitation. For example, note figures 2, 5, 8a, 8b and 9-12 of Rondinelli and figures 1 and 3 of Krichever.

Regarding Claims 4 and 14, note that Krichever discloses the light source (8) located above the level of container, i.e., the box-like structure with barcode "B" in figure 1. Additionally, note that the limitation "above" is considered a relative term with respect to the container. Note also that it would have been obvious to place the light source at any particular location for the purpose of obtaining maximum illumination of a desired area to be imaged.

Regarding Claims 5 and 6, note that Nordbryhn's, Krickever's and Rondinelli's devices are all emit light in synchronization with camera exposure, otherwise, the camera would not be able to take advantage of the light emitted by said light source.

Regarding Claims 7, 15 and 16, note that the term "short-pulsed light" is considered to be a relative term. Thus, Nordbryhn's, Krickever's and Rondinelli's devices are all considered to meet this limitation.

Regarding Claims 8, 17 and 18, Nordbryhn discloses use of an LED (light emitting diode) at col. 5, lines 23-29.

Regarding Claims 10 and 11, Nordbryhn does not expressly disclose one of the side edges of the mirror faces meet each other or are offset with respect to each other along the optical axis.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have positioned the mirrors such that their edges meet or such that said mirrors are offset along the optical axis for the predictable purpose of reducing the amount of space required by the image gathering device. Additionally, Applicant has not disclosed any particular purpose for using any particular configuration and such

mirrors could be used to obtain similar results regardless of whether they are located far away from each other or together with their edges in contact, each mirror of each configuration located relative to each other about the optical axis. Additionally, one ordinarily skilled in the art would have recognized many variations of mirror positions for resolving the same issue of imaging two sides of a container.

Regarding Claims 13, 21 and 22, Nordbryhn discloses a comparing the image with a reference image stored in memory so as to obtain and recognize distinguishing features of the container. See Nordbryhn, col. 9, lines 18-40 and col. 10, lines 39-42.

3. Claims 12, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steidel et al (US 6,137,900) in view of Nordbryhn (US 5,898,169), further in view of Rondinelli et al (US 7,123,777 B2), and still further in view of Krichever et al (US 2001/0042789 A1).

4. Steidel discloses details of a reverse vending machine for recycling containers, as illustrated in figure 1, and indicates imaging of said containers at figures 3a-3g, but does not provide details as required by Claims 1, 2 or 3.

5. **Regarding Claims 12, 19 and 20**, Steidel does not expressly disclose, but Nordbryhn discloses a device for recognizing a container, as described above, including that the container is located on a conveyor (6) as illustrated in figure 2.

At the time of the invention, it would have been obvious to incorporate Nordbryhn's container imaging system in Steidel's reverse vending machine for the purpose of "detecting and recognizing a more correct contour image of a liquid

container than that which has been previously obtainable." See Nordbryhn at col. 2, lines 17-21.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY A. SHAPIRO whose telephone number is (571)272-6943. The examiner can normally be reached on Monday-Friday, 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick H. Mackey can be reached on (571)272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeffrey A. Shapiro/
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